

WHAT IS CLAIMED IS:

1. A mechanism simulation method of performing
a mechanism simulation using both a dynamics simulation
and a kinematic simulation, wherein in the dynamics
5 simulation, a behavior of a mechanism is simulated
using a dynamics model including a continuous system
equation having a plurality of variables, and in the
kinematic simulation, a geometrical operation of the
mechanism is simulated using a three-dimensional
10 mechanism model including a plurality of mechanism
elements, the method comprising:

calculating a value of one of the variables of the
continuous system equation by a first simulator that
executes the dynamics simulation;

15 identifying a mechanism element corresponding to
a variable having the calculated value, referring to
a table that represents a correspondence between the
variables and the mechanism elements;

transmitting, to a second simulator, information
20 specifying the identified mechanism element and the
calculated value of the variable; and

executing the kinematic simulation by the second
simulator based on the information.

25 2. A mechanism simulation method according to
claim 1, wherein the dynamics model includes a hybrid
model comprising a continuous system model and a state
transition model, and the dynamics simulation includes

a hybrid simulation.

3. A mechanism simulation method according to
claim 1, wherein the state transition model inputs
a control signal from an external mechanism control
5 software system.

4. A mechanism simulation method according to
claim 1, wherein the mechanism elements include
a rotation angle or displacement of an actuator.

5. A mechanism simulation method according to
10 claim 1, further comprising:

reading data representing the variables of the
dynamics model;

reading data representing the mechanism elements
of the three-dimensional mechanism model;

15 extracting, from the data representing the
variables, a plurality of selective variables each of
which enables to be associated with any one of the
mechanism elements;

extracting, from the data representing the
20 mechanism elements, a plurality of selective mechanism
elements each of which enables to be associated with
any one of the variables; and

25 receiving a selection which is made by a user and
is indicative of a combination of one of the plurality
of selective variables and one of the plurality of
selective mechanism elements, to generate the table
based on the selection.

6. A mechanism simulation method according to
claim 5, wherein the one of the plurality of selective
variables in the combination is selected by:

selecting a class to which the selective variables
5 belong, and

selecting a member variable in the class.

7. A mechanism simulation method according to
claim 5, wherein data of the dynamics model includes a
description data described in a hybrid model language.

10 8. A mechanism simulation method according to
claim 5, further comprising storing the generated table
to a file.

9. A computer program stored in a computer
readable medium for performing a mechanism simulation
15 using both a dynamics simulation and a kinematic
simulation, wherein in the dynamics simulation,
a behavior of a mechanism is simulated using a dynamics
model including a continuous system equation having
a plurality of variables, and in the kinematic
simulation, a geometrical operation of the mechanism is
20 simulated using a three-dimensional mechanism model
including a plurality of mechanism elements, the
program comprising:

means for instructing a computer to calculate
25 a value of one of the variables of the continuous
system equation by a first simulator that executes
the dynamics simulation;

means for instructing the computer to identify
a mechanism element corresponding to a variable having
the calculated value, referring to a table that
represents a correspondence between the variables and
5 the mechanism elements;

means for instructing the computer to transmit,
to a second simulator, information specifying the
identified mechanism element and the calculated value
of the variable; and

10 means for instructing the computer to execute the
kinematic simulation by the second simulator based on
the information.

10. A computer program according to claim 9,
wherein the dynamics model includes a hybrid model
15 comprising a continuous system model and a state
transition model, and the dynamics simulation includes
a hybrid simulation.

11. A computer program according to claim 9,
wherein the state transition model inputs a control
20 signal from an external mechanism control software
system.

12. A computer program according to claim 9,
wherein the mechanism elements include a rotation angle
or displacement of an actuator.

25 13. A computer program according to claim 9,
further comprising:

means for instructing the computer to read data

representing the variables of the dynamics model;

means for instructing the computer to read data representing the mechanism elements of the three-dimensional mechanism model;

5 means for instructing the computer to extract, from the data representing the variables, a plurality of selective variables each of which enables to be associated with any one of the mechanism elements;

means for instructing the computer to extract, 10 from the data representing the mechanism elements, a plurality of selective mechanism elements each of which enables to be associated with any one of the variables; and

means for instructing the computer to receive 15 a selection which is made by a user and indicative of a combination of one of the plurality of selective variables and one of the plurality of selective mechanism elements, to generate the table based on the selection.

20 14. A computer program according to claim 13, further comprising:

means for instructing the computer to select a class to which the selective variables belong, and

means for instructing the computer to select 25 a member variable in the class, thereby selecting the one of the plurality of selective variables in the combination.

15. A computer program according to claim 13,
wherein data of the dynamics model includes a
description data described in a hybrid model language.

16. A computer program according to claim 13,
further comprising means for instructing the computer
to store the generated table to a file.
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